

## CLAIMS:

1. A display unit comprising at least one electro-wetting pixel (1300), each electro-wetting pixel comprising:
  - a closed cell (1303);
  - a polar liquid and a non-polar liquid (1301, 1302), said liquids being immiscible, having different optical properties and being contained in said cell;
  - a counter electrode (1306); and
  - at least one electrode pair, each electrode pair comprising an address electrode (1304) and a retain electrode (1305), said address and retain electrodes being separated from said liquids by a surface (1307) that is lyophobic in relation to only one of said liquids; and
- 10 wherein said address and retain electrodes are arranged at respective electric potentials to control a spatial distribution of said liquids and thereby defining a multi-stable pixel state.
2. A display unit according to claim 1, wherein said at least one electrode pair is arranged to provide one active multi-stable pixel state.
- 15 3. A display unit according to claim 1, further comprising a control unit which is operative to
  - apply potentials to the address and retain electrodes in relation to the counter electrode of each pixel; and to
  - set each pixel in either of at least one active multi-stable pixel state, by means of an address potential applied to said address and retain electrodes in relation to the counter electrode of the respective pixel, and a passive multi-stable pixel state, by means of removing any potential from the address and retain electrodes in relation to the counter electrode of the respective pixel; and to
  - retain a current multi-stable pixel state in each pixel by means of applying a retain potential to each retain electrode only of the respective pixel.

4. A display unit according to claim 1, wherein the display unit comprises a plurality of pixels and wherein the pixels are arranged along rows and columns in a matrix configuration .

5 5. A display unit according to claim 1, wherein each pixel further comprises at least one additional electrode pair (1412, 1422; 1413, 1423), each pair comprising a retain electrode (1422; 1423) and an address electrode (1412; 1413), wherein the address and retain electrodes in each pixel are consecutively arranged so that the address electrodes are spatially separated from each other by retain electrodes and vice versa, and wherein each electrode 10 pair provides for a multi-stable pixel state.

6. A display unit according to claim 5, wherein the retain electrodes within each pixel is electrically interconnected with each other.

15 7. A display unit according to claim 4, wherein every retain electrode within each pixel arranged along the same row is electrically interconnected with each other.

8. A display unit according to claim 4, wherein every counter electrode within each pixel arranged along the same row is electrically interconnected with each other.

20 9. A display unit according to claim 1, wherein said liquids in each pixel have different indices of refraction and define a lens and wherein each pixel state is controlled by said lens.

25 10. A display unit according to claim 9, further comprising a light guide, and wherein said electrodes are operative to move the lens between an ON state in which the lens is operative to focus light from the light guide towards an exit surface of the cell and an OFF state in which the lens is operative to spread light from the light guide away from the exit surface.

30 11. A display unit according to claim 1, wherein said liquids have different light filtering properties and wherein the spatial distribution of the liquids provides a controllable light filter which defines said pixel state.

12. A method for bistable addressing of at least one electro-wetting pixel, each pixel comprising an address electrode (1304), a retain electrode (1305) and a counter electrode (1306),

5 in which an active state is set by applying a potential to the address electrode and the retain electrode in relation to the counter electrode; and

in which a passive state is set by removing any potential from the address electrode and from the retain electrode in relation to the counter electrode; the method further comprising the step of

10 retaining a current state by applying a potential to the retain electrode in relation to the counter electrode and removing any potential from the address electrode in relation to the counter electrode.

13. A method for bistable addressing according to claim 12, wherein a plurality of pixels in a display device are addressed during picture frames, the method comprising the consecutive steps of:

- setting each pixel to an active state;
- setting a subset of said pixels to a passive state; and
- retaining each pixel in its current state.

20 14. A method for bistable addressing according to claim 14, the pixels being arranged in a matrix having rows and columns and the pixels being addressed one row at a time.